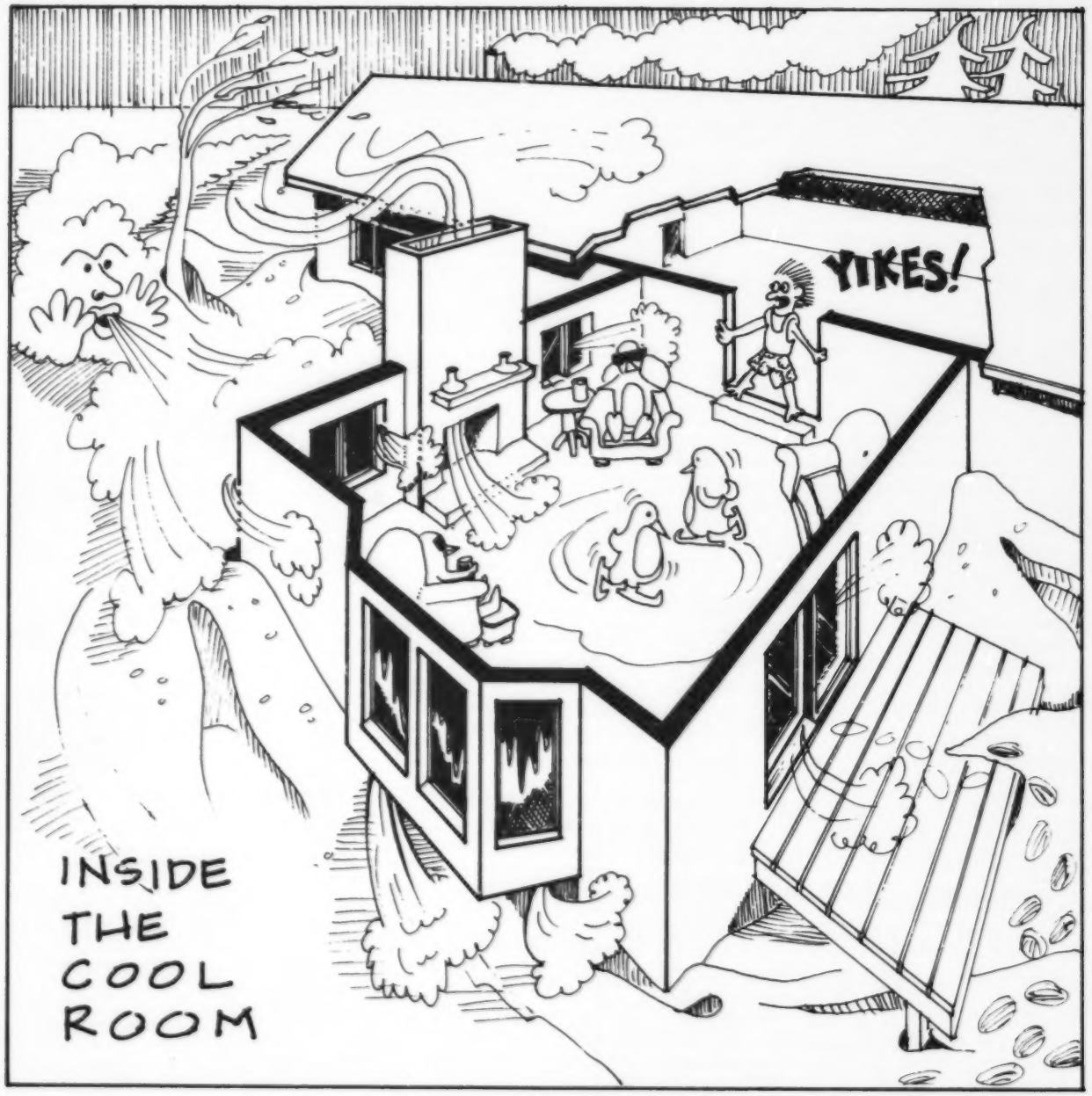
Cool Rooms



Whether you live in an old home or an ultra-modern "palace" one or more of the rooms can give you goose bumps, cold feet or a runny nose. A room that is merely uncomfortable sometimes can become impossible when the temperature plunges into the -25°C range. This publication identifies the causes of cool rooms and gives some solutions.

Common Causes

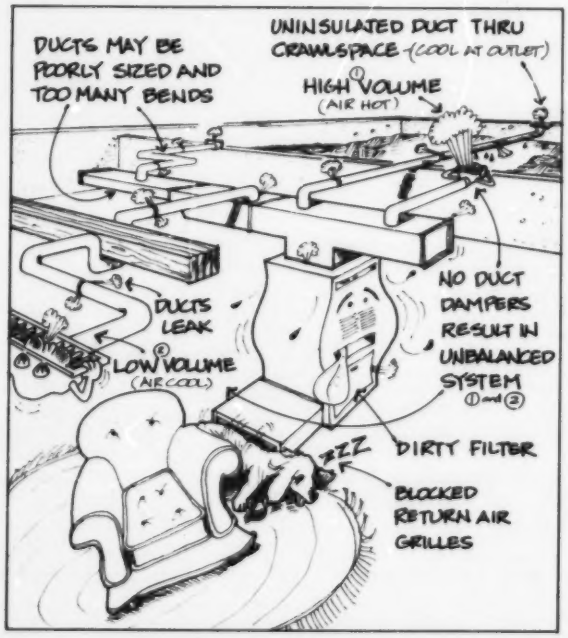
Most cool rooms have things in common:

- it is the room farthest from the furnace
- it has two outside walls
- it faces prevailing winter winds
- it may have an uninsulated or sunken floor
- it may have aluminum sliding windows, bay or bow window, sliding patio door, or fireplace.

Typical problems:

Inadequate heating systems. Most houses have furnaces large enough to heat them during -40° C weather. The problem is not furnace size but heat distribution. Return air ducts may be plugged with debris, undersized, behind furniture or draw too much air from one intake and not enough from others. This is common in two-storey or split-level homes. Closing a door cuts off the runover of air. If air is not returned to the furnace, warm air will not be supplied.

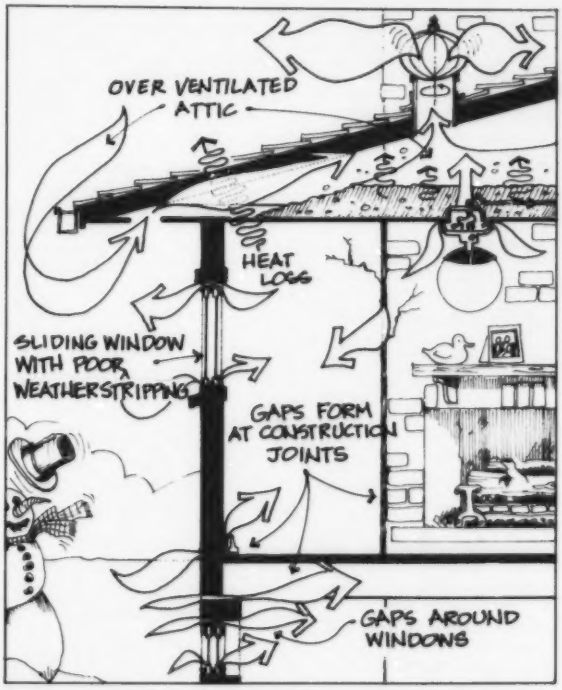
The supply air system may be poorly laid out with too many bends and reducers. Ductwork where joints and cracks have not been sealed allows air pressure to drop reducing the volume of hot air to a distant room. Metal ducts are not insulated in most homes. As a result, heat (as much as four or five degrees) is lost as the warm air travels through a long duct. The heat remains in the house but not where you want it. One room can be hot while the other is cold.


DUCTS MAY BE POORLY SIZED AND TOO MANY BENDS
UNINSULATED DUCT THRU CRAWLSPACE (COOL AT OUTLET)
HIGH VOLUME (AIR HOT)
DUCTS LEAK
LOW VOLUME (AIR COOL)
NO DUCT DAMPERS RESULT IN UNBALANCED SYSTEM
DIRTY FILTER
BLOCKED RETURN AIR GRILLES

Lack of insulation. Prior to 1978 the building code had no minimum insulation requirements. Most homes built in the 1940s had wood chips in the walls or no insulation at all. Homes built in the 1950s and 60s usually had some type of wall insulation, ranging from vermiculite poured into the wall to R 7 rockwool batts. Attics and cathedral ceilings built prior to 1970 had about R 7 in wood shavings, batt insulation or vermiculite. Floors over crawlspaces or unheated garages usually had no insulation.

Windows in older homes, such as solid aluminum sliders or wooden double hung units, are often cool due to unreliable weatherstripping. Opening and closing wears out the weatherstripping quickly. Bay and bow windows are often cold because they are difficult to seal. They also often lack insulation and an air barrier in the floor.

An over-ventilated attic. An attic which is over-ventilated in winter can have excessive heat loss, even if well-insulated. Attics with improperly controlled electric fans or wind-driven turbines (whirlybirds) are examples.



Wind intrusion. Prior to the 1970s energy crisis, homes were not airtight. Many exterior materials were not windproof or fell into disrepair. Where two building materials met, gaps were not sealed or have since opened, allowing drafts. Many older homes do not have a polyethylene air/vapour barrier in the exterior walls. Others have wind coming through the fireplace, vent openings or around the sill plate.

Fireplaces, especially open masonry types, draw warm air up the chimney. This air is replaced by cool exterior air which causes drafts.

Solving the Problem

Area	Problem	Remedy
Ductwork	Blocked by furniture	• Remove furniture
	Plugged with debris	• Remove with hand or vacuum • Professional vacuum service
	Leaky ductwork	• Tape joints with duct tape • Eliminate elbows
	Poorly laid out	• Extend supply into cantilevered area • Re-route basement supply air outlets from ceiling to floor level or re-route basement return air intakes to floor level • Replace old gravity duct-work with system designed for forced air • Move the return air inlet from the sunken living room areas and provide the lowest level with an extra supply air outlet
	Under-sized ductwork	• Add in-duct booster fan • Replace with correct size of duct-work
	Air stratification	• Run furnace fan continually • Install ceiling fan
Walls, Ceilings, Floors	Air leakage	• Put gaskets behind electrical outlets, light fixtures, switch plates • Caulk behind baseboards and around all exterior wall sections • Caulk between exterior finishing materials, brickmolds, etc. • Seal around plumbing stack, chimney, partition walls • Weatherstrip attic access hatch • Install airproof covering on underside of all cantilevers and floors over crawlspaces and unheated garages, using stucco or parging
	Thermal leakage	• Blow insulation into stud wall cavities or place board insulation on interior or exterior wall surfaces • Add additional batt or blown insulation to attic • Insulate and seal floor
Windows	Air leakage	• Replace worn weatherstripping • Remove interior casing, caulk between window, house frames • Add interior storm window
	Thermal leakage	• Add interior storm window • Add shutters • Replace window with units of higher R-Value
Fireplaces	Air leakage/cold drafts	• Caulk gaps between masonry and fresh/combustion air intakes • Caulk joints between brick work and wall • Make fireplace plug • Add electrically powered chimney cap • Upgrade fireplace with approved fireplace insert

More details on the above solutions are in: *Caulking and Weatherstripping, Heating Systems, Windows, Attic Insulation, Wood Heating and Modern Insulated Crawlspace.*

Summary

When analyzing a cool room and looking for ways to fix it, remember:

- investigate the problem from every angle using these guidelines
- do the simple, low-cost things first
- more than one approach is usually needed to solve the problem

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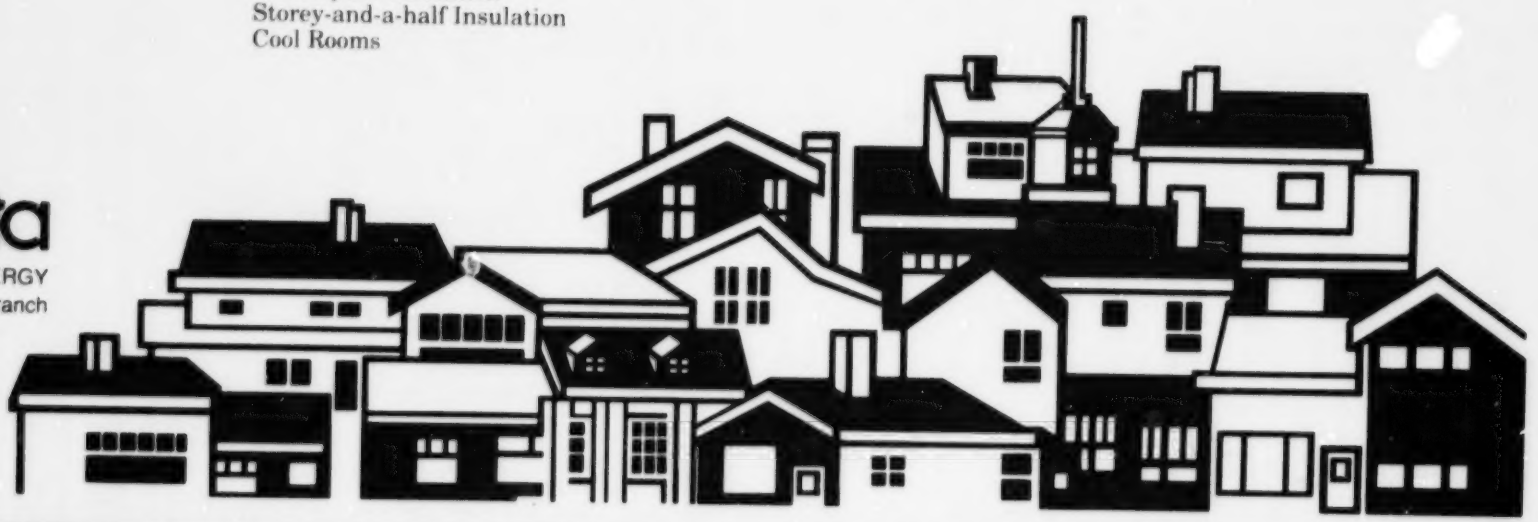

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